

COUNTRY ANALYSIS BRIEFS

United Arab Emirates

Last Updated: November 2009

Background

The UAE holds the seventh largest proven oil reserves and the sixth largest proven natural gas reserves in the world.

The United Arab Emirates (UAE) has the seventh largest proven oil reserves in the world at 97.8 billion barrels, according to the *Oil and Gas Journal* in January 2009. The UAE also has the sixth largest proven natural gas reserves in the world at 214 trillion cubic feet. It is an important oil and natural gas producer and is a member of the Organization of the Petroleum Exporting Countries (OPEC).

The UAE is a federation of 7 emirates with the second largest economy in the Arab Middle East after Saudi Arabia. The emirate of Abu Dhabi is the focal point of the UAE's oil and gas industry, followed by Dubai, Sharjah, and Ras al Khaimah. While Abu Dhabi is the hydrocarbon and industrial center, Dubai is the trading, financial, and tourist center of the emirates. As a result of a successful effort at economic diversification, the finance and service sectors in Dubai are making the city a favored base for multinational corporations in the Gulf.

The UAE is in the middle of a major expansion program of its hydrocarbon sector mainly through the use of enhanced oil recovery techniques at existing fields. Projects to develop natural gas from associated and non-associated fields are also underway. The UAE has suffered from a shortage of natural gas in recent years as domestic demand for electricity generated in gas-fired plants has continued to rise, fuelled by generous subsidies, as well as the rapid development of the UAE as a regional commercial hub, and the increased delivery of industrialization projects using gas as a feedstock. However, despite the UAE's large natural gas reserves, high extraction costs and sulfur content are major issues in their development.

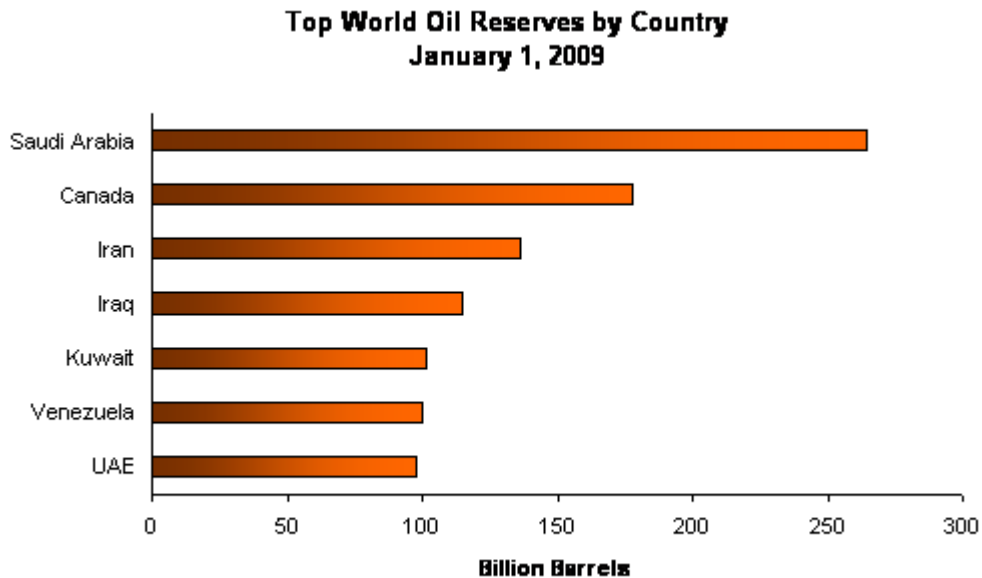


In late November 2009, Dubai World, a Dubai state-owned holding company, announced that the company would seek a standstill agreement with its creditors and an extension of loan maturities. This announcement caused a drop, at least temporarily, in financial markets worldwide. By the end of November 2009, it was still unclear what impact the announcement would ultimately have on Dubai and world financial markets.

Oil

The United Arab Emirates has ambitious plans to further increase its oil production capacity over the next several years.

According to *Oil & Gas Journal* (OGJ), the UAE's proven oil reserves were 97.8 billion barrels as of January 1, 2009. Abu Dhabi leads the other emirates with 92.2 billion barrels followed by Dubai with 4 billion barrels, Sharjah with 1.5 billion barrels, and Ras al Khaimah with 100 million barrels. UAE crude streams are a light and sweet composite. The API gravity ranges from 34 to 36.8 degrees in the Zakum field, to 40.4 degrees in the Murban field.



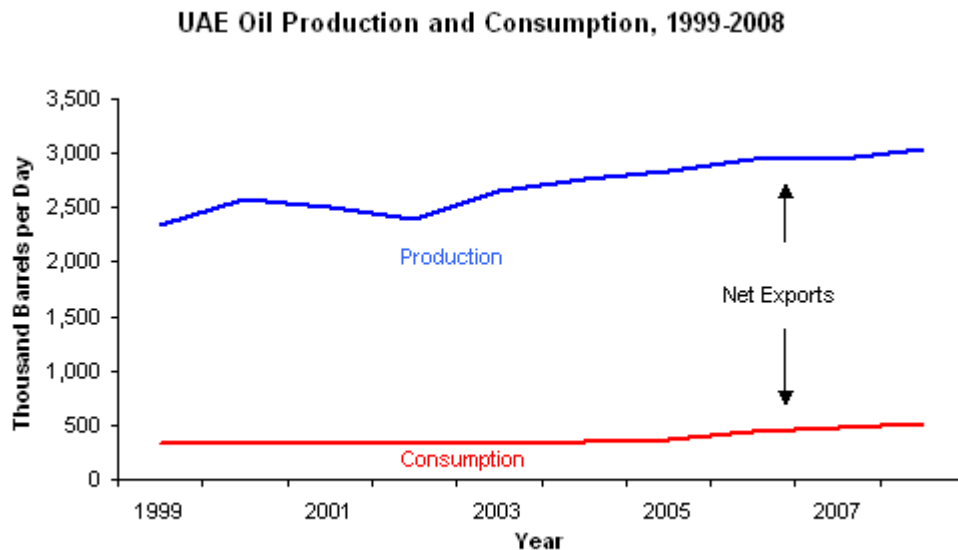
Source: *Oil and Gas Journal*

Sector Organization

The largest state-owned company is the Abu Dhabi National Oil Company (ADNOC), which operates 17 subsidiary companies in the oil and natural gas sectors. Hydrocarbon production is handled on a production-sharing basis between state-owned companies and a few key major foreign investors. However, ADNOC holds a majority share in the leading oil-producing consortia, including the Abu Dhabi Company for Onshore Operations (ADCO), as well as the Abu Dhabi Marine Operating Company (ADMA-OPCO), and the Zakum Development Company (ZADCO). Major foreign investors include: British Petroleum (BP), Petrofac, ExxonMobil, and Total.

Exploration and Production

In 2008, the UAE produced 3 million barrels per day (bbl/d) of total oil liquids, of which 2.57 million bbl/d was crude oil and 356,000 bbl/d was natural gas liquids (NGLs). The UAE's domestic oil consumption averaged only 525,000 bbl/d in 2008, and the majority of oil production was exported to Asian countries. In the first 3 quarters of 2009, the UAE produced an average of 2.2 million bbl/d of crude following a decision by OPEC to cut production targets in late 2008.



Source: EIA

The UAE is a mature oil market, with limited recent exploration success. Most new near-term projects are focused on the further development of known fields through enhanced oil recovery techniques and the upgrading of infrastructure. There are several important projects currently underway:

The Upper Zakum expansion project is at the center of the government's program to maintain and expand output. The project is a partnership between ADNOC, ExxonMobil, and Japan Oil Development Company (Jodco) that would increase production capacity from its current 550,000 bbl/d to 750,000 by 2015 and eventually increase it to 1.2 million bbl/d. Abu Dhabi's onshore Zakum oil field is the largest in the country and the third largest in the Middle East, with an estimated 66 billion proven barrels.

The offshore Umm Shaif project aims to maintain and increase current production capacity. It has been underway since 2007. In June 2009, Hyundai Industries announced that the third of its 3 offshore oil platforms had been completed for the Umm Shaif oil field. Current oil production is estimated at between 220,000 and 280,000 bbl/d, and will expand to 300,000 bbl/d of oil plus 990 million cubic feet of gas per day by 2010.

Abu Dhabi's Asab-3 project is aimed at increasing oil production from the Asab, Shah, and Sahil oil fields by 400,000 bbl/d from their current average of 1.4 million bbl/d, which is roughly half of the UAE's current production. In November 2009, 3 contracts worth a total of \$3.5 billion were awarded, including a \$408 million engineering, procurement, and construction (EPC) contract for natural gas facilities at the fields. The project is expected to produce about 150 million cubic feet per day of additional associated gas when it is completed in the third quarter of 2012.

Development of the offshore Nasr oil field project is part of the UAE's long-term plan to increase offshore oil production capacity from its current 1.1 million to 1.75 million bbl/d by 2019. In August 2009, Technip won a front-end engineering and design contract for the first phase of development. Offshore operator Adma-Opco, which owns the field, hopes to produce 25,000 bbl/d from the field by 2015 and 65,000 bbl/d by 2018. This is the first new field for commercial use to be developed since the Lower Zakum field came onstream in 1966.

Oil Pipelines

The Emirates have a network of domestic pipelines linking fields with processing plants and exit ports for trade. There are also inter-emirate pipelines primarily for natural gas injection to increase oil recovery levels in existing Dubai oil fields. The Abu Dhabi Crude Oil Pipeline (ADCOP) is currently under construction by China National Petroleum Corporation (CNPC).

In December 2008, CNPC was awarded a contract to build the ADCOP pipeline, which will have a total length of about 250 miles and a capacity of 1.5 million bbl/d, linking the Habshan oil field in Abu Dhabi with Fujairah port. The pipeline is scheduled to start trial operation at the end of 2010 and begin operating in August 2011. The pipeline will allow the UAE to pump about 60 percent of its crude exports to Fujairah port on the Gulf of Oman, thus avoiding the strategic shipping

chokepoint at the [Strait of Hormuz](#).

Exports

In 2008, the UAE exported 2.52 million bbl/d, mostly to Asian countries, with over 40 percent going to Japan. ADNOC has 2 subsidiaries that are responsible for handling crude oil, product and LNG exports. The Abu Dhabi National Tanker Company handles crude and product exports, operating 9 vessels. The National Gas Shipping Company handles shipments from the ADGAS LNG plant, operating 8 LNG carriers. Due to its location on the coast of the Arabian Gulf, the UAE has a number of ports for shipping its oil and gas exports: crude oil is shipped from Jebel Dhana and Zirku Island; LNG exports from Das Island; products from Ruwais, Umm al-Nar, and Jebel Ali. The port of Fujairah is one of the world's 3 biggest bunkering ports, and it is currently being upgraded to become the terminus for the ADCOP pipeline from the Habshan oil field. The port will be adding 16 new offshore oil berths to prepare for the increased volumes starting in 2010.

Downstream/Refining

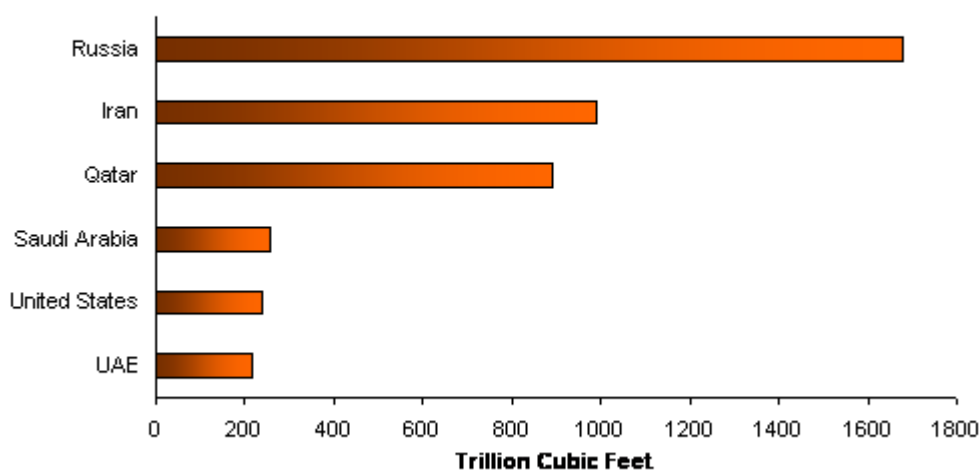
According to Oil and Gas Journal, the UAE had 781,250 bbl/d of refining capacity at 5 facilities as of January 1, 2009. The largest two are ADNOC's Ruwais, with a 350,000 bbl/d capacity, and Umm Al-Nar, with a 150,000 bbl/d capacity. A previously planned petrochemicals refinery at Fujairah is reportedly still under consideration by Abu Dhabi's International Petroleum Investment Company (IPIC), although it may be downgraded from 500,000 bbl/d to 200,000 bbl/d. However, ADNOC announced in September 2009 its plans to double the capacity of the Ruwais complex in the next 4 years.

Natural Gas

The UAE is a major producer of natural gas but rising domestic consumption caused the UAE to go from being a net gas exporter to a net gas importer in 2007.

According to *Oil and Gas Journal*, the UAE's proven natural gas reserves were 214.4 trillion cubic feet (Tcf) as of January 1, 2009. The UAE holds the sixth largest proven natural gas reserves in the world after Russia, Iran, Qatar, Saudi Arabia, and the United States. The largest reserves of 198.5 Tcf are located in Abu Dhabi. Sharjah, Dubai, and Ras al-Khaimah contain smaller reserves of 10.7 Tcf, 4.0 Tcf, and 1.2 Tcf, respectively.

**Top World Natural Gas Reserves by Country
January 1, 2009**



Source: *Oil and Gas Journal*

Exploration and Production

In 2008, the UAE produced 1.77 Tcf and consumed 2.1 Tcf of dry gas. The UAE became a net natural gas importer in 2007, as consumption has grown much faster than production. Increased domestic demand for electricity, the desalinization of water, growing demand from the petrochemical industry, and the need for an enhanced oil recovery (EOR) system based on natural gas injections in mature oil fields have caused the UAE's domestic demand for natural gas to rise.

Rising domestic demand has put a new focus on developing the UAE's large natural gas reserves despite high extraction costs and sulfur content. GASCO has awarded contracts for a number of

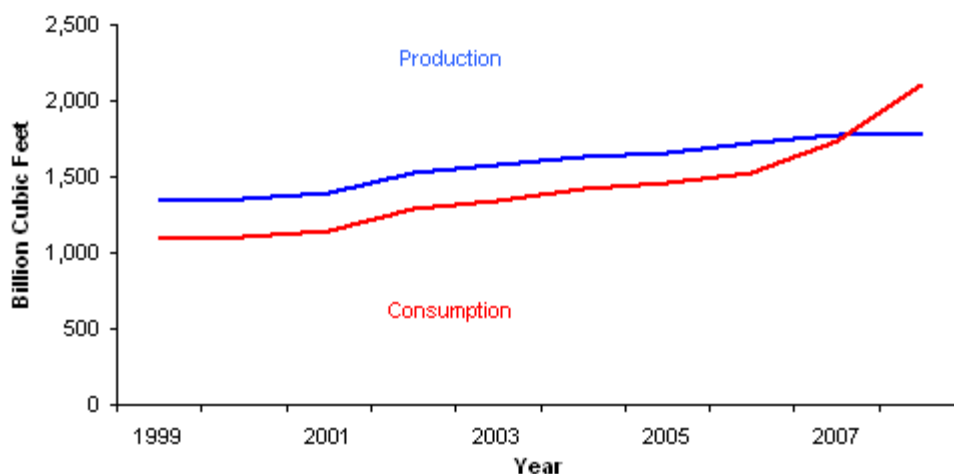
large-scale gas projects in the past few months, following the push to develop several large-scale oil projects earlier in 2009, which opened up the development of associated gas production.

According to *Global Insight*, the largest new natural gas project is at onshore Habshan gas field, where phase 3 of the gas development project includes increasing production by 1 to 1.3 billion cubic feet per day (Bcf/d) of gas, along with new natural gas liquid (NGL) and condensate production facilities, and a 68-mile NGL pipeline to Ruwais, where new processing facilities will be added.

Abu Dhabi's Asab-3 project aims to increase oil and gas production from the Asab, Shah, and Sahil oil fields. France's Technip won an engineering, procurement, and construction (EPC) contract in November 2009. The company aims to produce about 150 million cubic feet per day (MMcf/d) of additional associated gas from the project when it is completed in the third quarter of 2012.

The Shah Project joint venture contract between ADNOC and ConocoPhillips was signed in July 2009. This large-scale project involves the development of sour natural gas and condensate reservoirs within the Shah gas field located southwest of the city of Abu Dhabi, including the construction of gas gathering systems, gas processing trains and product pipelines designed to produce, process and transport 1 Bcf/d of gas, plus associated liquids and sulfur, by 2013. The Shah Project will reportedly include one of the largest sulfur removal plants in the world and an exporting facility to be located in Ruwais Industrial City.

UAE Natural Gas Production and Consumption, 1999-2008



Source: EIA

Exports and Imports

According to EIA estimates, the UAE had gross imports of 592 Bcf and gross exports of 267 Bcf of natural gas in 2008. Net natural gas imports amounted to about 280 Bcf, imported mainly from Qatar. Exports, in the form of LNG, were shipped to Asian countries, primarily to Japan.

The UAE set up its first LNG plant in 1977 on Das Island operated by ADGAS. The plant is run on associated natural gas from the Um Shaif, Lower Zakum, and Bunduq oil fields. UAE natural gas exports are managed by ADNOC subsidiary, Abu Dhabi Gas Liquefaction Co. (ADGAS). The National Gas Shipping Company (NGSCO), which operates 8 LNG carriers, handles the shipments from the LNG plant.

The Dolphin Pipeline Project

The Dolphin natural gas pipeline project linking Qatar, the UAE, and Oman is the first cross border natural gas pipeline in the Gulf Arab region. Natural gas is imported from Qatar's North Field to Abu Dhabi, Dubai, and Fujairah in the UAE, and then on to Oman. The managing company, UAE's Mubadala Development Company, holds a 51-percent stake in Dolphin Energy, with France's Total and U.S. Occidental Petroleum at 24.5 percent each. The project will carry about 2 Bcf/d of natural gas from Qatar to the UAE and Oman. The project consists of a 48-inch subsea export pipeline running 226 miles from Qatar to Dolphin's facilities at Taweelah, Abu Dhabi, where the first natural gas imports were received in July 2007. From Taweelah, a 152-mile pipeline runs to

the Qidfa Water and Electricity Station in Fujairah. Construction on this line will be completed by third-quarter 2010.

From Fujairah, natural gas is piped to Oman by an existing pipeline. Since January 2004, Oman had been supplying Dolphin Energy with pipeline gas for use at the Qidfa plant as a stopgap measure until Dolphin was ready to take over supplying the plant. The pipeline linking the UAE and Oman was reversed in October 2008, with Dolphin reportedly supplying Oman with 200,000 cubic feet per day to help cover shortages in the sultanate.

Profile

Energy Overview

Proven Oil Reserves (January 1, 2009E)	97.8 billion barrels
Oil Production (2008E)	3.0 million barrels per day, of which 2.6 million was crude oil.
Oil Consumption (2008E)	525,000 barrels per day
Crude Oil Distillation Capacity (2009E)	781,000 barrels per day
Proven Natural Gas Reserves (January 1, 2009E)	214.4 trillion cubic feet
Natural Gas Production (2008E)	1.77 trillion cubic feet
Natural Gas Consumption (2008E)	2.1 billion cubic feet
Recoverable Coal Reserves (2007E)	None
Coal Production (2007E)	None
Coal Consumption (2007E)	None
Electricity Installed Capacity (2007E)	15.7 gigawatts
Electricity Production (2007E)	71.5 billion kilowatt hours
Electricity Consumption (2007E)	66 billion kilowatt hours
Total Energy Consumption (2007E)	2.86 quadrillion Btus*, of which Natural Gas (65%), Oil (35%)
Total Per Capita Energy Consumption (2007E)	633.6 million Btus
Energy Intensity (2007E)	17,082 Btu per \$2005-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2007E)	171 million metric tons, of which Natural Gas (57%), Oil (43%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2007E)	38 metric tons
Carbon Dioxide Intensity (2007E)	1.0 Metric tons per thousand \$2005-PPP**

Oil and Gas Industry

Major Oil/Gas Ports	Abu Dhabi: Das Island, Jebel Dhana, Ruwais, Zirku Island, Umm al Nar; Dubai: Jebel Ali, Port Rashid; Fujairah: port
Major Oil Fields	Abu Dhabi: 'Asab, Bab, Bu Hasa, Al-Zakum; Dubai: Falah, Fateh, Southwest Fateh; Sharjah: Mubarak
Major Natural Gas Fields	Abu Dhabi: Khuff, Abu al-Bukhush, Bab, Bu Hasa, Umm Shaif, Zakum
Total Refining Capacity 2009 and Major Refineries	Abu Dhabi: Ruwais (350,000 bbl/d), Umm al-Nar (150,000 bbl/d); Dubai: Jebel Ali (120,000 bbl/d); Fujairah: Metro Oil (90,000 bbl/d); Sharjah: Harriyah (71,250 bbl/d) = 781,250 bbl/d

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.

**GDP figures from Global Insight estimates based on purchasing power parity (PPP) exchange rates.

Links

ExxonMobil

OPEC

Links

EIA Links

[EIA – UAE Country Energy Profile](#)

U.S. Government

[CIA World Factbook - United Arab Emirates](#)

[U.S. State Department Background Notes on UAE](#)

[U.S. State Department Consular Information Sheet, UAE](#)

[U.S. Embassy, Abu Dhabi](#)

Foreign Government Agencies

[Embassy of UAE in Washington, DC](#)

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[Abu Dhabi National Oil Company \(ADNOC\)](#)

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Platts Commodity News

Reuters News

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